have since been made; but while those of the planets promise well, no impression whatever of the brightest nebulæ could be secured. Among the many subjects which have occupied a large share of the attention of scientific circles in the older world, and which mark indelibly the progress of scientific research during the past year, there is one which appears to me of surpassing imporance. The Royal Astronomical Society awarded its gold medal this year to Prof. Schiaparelli, director of the Observatory at Milan, principally on account of his researches on the relations that exist between comets and shooting stars. You will remember in a former address I had the honour of delivering to you, I spoke of the 'meteor shower' which fell in Europe in November 186—, and that it had been established beyond a doubt that these bodies travelled in orbits intersecting that of the earth at different points; that one coterie intersected it in November, another in August, and so forth. Since then, however, it has been found from observation that the number of these meteor rings is very large, and that they intersect the earth's orbit at numerous points. And it may be stated generally, that all falling or shooting stars, at the time we see them, are, or have been very recently, members of groups travelling in true orbits, and not merely stray wanderers in space. Prof. Schiaparelli has concluded from his researches that 'celestial matter may be divided into the following classes:—1. Fixed stars. 2. Agglomeration of small stars (resolvable nebulæ). 3. Similar bodies, invisible except when approaching the sun (comets). 4. Small particles, composing a cosmical cloud.' He thinks the last occupy a large portion of space, and have motions similar to fixed stars. The latter are the sources of falling stars. Brought by the motion of our system in space within the sphere of our sun's attraction, they become in a measure part of his family and subject to him. If, while making their sun journey, they approach a planet—the earth for instance—they get disturbed in their orbits, and, becoming subject to the earth's mass, liable to enter the upper regions of our atmosphere, under which condition they appear to us as 'shooting stars.' 'Thus meteors and other celestial phenomena of like nature, which a century ago were regarded as atmospheric phenomena—which La Place and Olbers ventured to think came from the moon, and which were afterwards raised to the dignity of being members of the planetary system—are now proved to belong to the stellar regions, and to be in truth falling stars. They have the same relation to comets as the asteroids have to the planets; in both cases their small size is made up by their greater number. Lastly, we may presume that it is certain that falling stars, meteors, and aerolites differ in size only and not in composition; therefore we may presume that they are an example of what the universe is composed of. As in them we find no elements foreign to those of the earth, we may infer the similarity of composition of all the universe—a fact already suggested by the revelations of the spectroscope.' Professor Schiaparelli had noticed a remarkable likeness between the elements of the orbits of some of these meteor groups to those of some well-known comets, the perihelion passage occurring approximately at near dates, the direction of their motion alike, the point they intersect the ecliptic, and their inclination to it very similar, while the distances of their nearest approach to the sun, and their period of revolution, have also a marked likeness. The relations are very remarkable, and Prof. Schiaparelli concludes one of his last memoirs on this subject in these words:—'These approximations need no comment. Must we regard these falling stars as swarms of small comets, or rather as the product of the dissolution of so many great comets? I dare make no reply to such a question.' The conclusions of Prof. Schiaparelli are of the highest interest, and suggest some new and interesting questions on the constitution of the universe. Are the irresolvable nebulæ systems of these cosmical particles? If so it will add a fresh interest to our observations of the changes going on in that of η Argus.

"In a new country, such as ours, in which all are so fully engaged in business pursuits, it would be unreasonable to expect so large an annual crop of scientific facts as are realised in the older countries; but as the fields for original observations in a new country are really wider in many respects than in the older, it is of course, of the first importance that what we do obtain should be properly recorded and disseminated. I have mentioned that the Society's *Transactions*, the printing of which has been too long suspended, will be immediately resumed, and I believe I may confidently state that the present prospects of the Society are such as to warrant the belief that they will henceforth appear with regularity. It should be remembered that although this Society has how existed for so many years, its ranks are still thin, wanting both workers and supporters. It has been recently proposed in your council, as a means of strengthening and increasing the utility of the Society, that a rule should be adopted to admit of residents at a distance joining us as country life-members, on the same scale as ordinary members are now admitted, by payment of half the usual subscription. This will entitle such members to the Society's publications, and to all the privileges of membership when in Melbourne. I have chosen the earliest occasion for announcing this proposition, which will no doubt be presently adopted by the generality of the members. I also wish to remove an impression which, I believe, holds some ground, that advanced scientific attainments are indispensable qualifications for membership. The object for which our Society is founded was the promotion of literature, science, and art in the colony. Whoever can assist in this is, so far, eligible for membership."

NOTES

MR. STANLEY has forwarded to the daily papers a letter from Zanzibar, dated July 22nd, stating that communications have been received from the interior, which render it probable that Dr. Livingstone would receive his stores and letters about August 1st. In that case he would leave Unyamyembe about August 10th, and be now near Mrera, in Central Ukonougo.

THE following letter has been sent by Lord Granville to Mr. H. M. Stanley, the special correspondent of the *New York Herald*, accompanied by a magnificent gold snuff-box richly set in brilliants:—"Foreign Office, Aug. 27, 1872.—Sir,—I have great satisfaction in conveying to you, by command of the Queen, Her Majesty's high appreciation of the prudence and zeal which you have displayed in opening a communication with Dr. Livingstone, and so relieving Her Majesty from the anxiety which, in common with her subjects, she had felt in regard to the fate of that distinguished traveller. The Queen desires me to express her thanks for the service you have thus rendered, together with Her Majesty's congratulations on your having so successfully carried out the mission which you so fearlessly undertook. Her Majesty also desires me to request your acceptance of the memorial which accompanies this letter."

ON Monday evening the "Livingstone Search and Relief Committee of the Royal Geographical Society" met to consider its final judgment upon the conduct of the expedition under Lieutenant Dawson, which left England on the 9th of last February, and arrived at Zanzibar on the 17th of March, some months after Dr. Livingstone had been found and relieved by Mr. Stanley. The Society, however, adjourned the inquiry, and have agreed to put their questions in writing, so that Lieutenant Dawson may give them a categorical answer. The blue book containing Dr. Livingstone's despatches of 1870, has been placed before Parliament.

The *Times of India* of Aug. 9 contains the order of the local Government on the report of the Madras Cyclone Committee. In this order Mr. Pogson, the Government Astronomer, is severely blamed for his negligence in not giving due warning of the coming storm, as it was his duty and in his power to do. "Mr. Pogson," the order says, "endeavours to explain this omission as having been caused partly by an accident which happened to his carriage at noon on May 1, but partly also by disinclination to suggest anything to the Marine Department, his advice not having of late years been sought by that department. It does not appear to have occurred to Mr. Pogson that an occasion on which a most serious loss of life was imminent was not one for the indulgence of such susceptibilities. The Governor in Council considers that Mr. Pogson has failed to justify his negligence on this occasion. It is hardly necessary that the Government should, after the disastrous consequences of Mr. Pogson's neglect, inform him that they expect from him in future the strictest observance of that portion of his instructions which require him 'to furnish notices of approaching stormy weather,' and that the most essential part of his duty is constant, and, when necessary, personal communication with the head of the Marine Department." The Marine Department and all the officials connected therewith are severely blamed; and Mr. Dalrymple, the Master-Attendant, comes in for special censure on account of his negligence, and especially "for omitting to remain at his office during the night of May 1." The Government have ordered the appliances for saving life and property to be considerably increased, and accept in their entirety the recommendations of the Committee, which they resolve to adopt and embody in a code of rules, which will be communicated for the strictest observance by all the departments concerned.

Next year's London International Exhibition will consist of three divisions:—1. Fine Arts; 2. Manufactures; 3. Recent Scientific Inventions and Discoveries of all kinds. We notice that of the future Exhibitions that of 1874 will embrace Artificial Illuminations by all Methods; Gas and its Manufacture. 1875.—Hydraulics and Experiments; Supply of Water. 1876.—Photographic Apparatus and Photography, and Philosophical Instruments and Processes depending upon their use. 1877.—Health; Manufactures, &c., promoting Health, with Experiments. 1880.—Chemical Substances and Products, and Experiments; Pharmaceutical Processes.

We have received some official details concerning the Universal Exhibition to be held at Vienna from May 1 to October 31, 1873. Her Majesty has appointed a large British Commission, headed by the Prince of Wales, to look after British interests in connection with this exhibition, which is expected to be of unusual interest, on account of Vienna being in a measure half way between East and West. The exhibition is to be held in the Prater—"the Windsor Park of Vienna"—in buildings erected specially for the purpose, and in the surrounding park and gardens. At no previous International, to judge by the official programme, have so many facilities been afforded to exhibitors. Especially is every encouragement given to the bringing forward of machinery of all kinds, the cost of exhibition to the owners being reduced to a minimum. If the Exhibition does not turn out a success, the blame can hardly be attributed to the Austrians. All information will be given to those who desire it by Mr. Philip Cunliffe Owen, Secretary to the Commission, 41, Parliament Street. British exhibitors can communicate with the Austrian Commission solely through the British Commission.

A bequest of 10,000 fr. has been made to the Academy of Medicine in Paris by M. Fabret, for the purpose of founding a prize in mental and nervous diseases.

There has recently been formed at Amiens a Society calling itself "Société Linnéenne du Nord de la France," having for its object the study of all the branches of Natural History in its wide sense, and is divided into three sections—Zoology, Botany, and Geology. The society will hold general meetings, as well as meetings of sections, and during the favourable season will make excursions for the purpose of exploring the surrounding region. It intends to publish annually a volume of memoirs, and a monthly *Bulletin des Sciences Naturelles.*

We are glad to be able to record the addition to the Brighton Aquarium, of a specimen of Muller's Topknot (*Rhombus hirtus.*) It was netted off the Brighton coast last week. But one capture of this rare fish off the Sussex coast is recorded by Yarrell, but it is more frequently taken off the Cornish coast. The interesting event is also announced of the birth of a young cuttle-fish, which signalised its entrance into the world by an immediate discharge of the sepia fluid.

Some little time ago we referred to the proposed aquarium for Manchester (Nature, vol. v. p. 487). A recent report of a meeting of shareholders, shows that it is hoped the building will be completed and opened next spring, and that temporary buildings with the necessary tanks have been provided for the reception of such marine animals and plants as can only be obtained in the summer season. They will then become acclimatised, and the tanks can be afterwards removed to their permanent places in the aquarium.

The Committee for the Recording of Earthquakes in Scotland reported at the British Association Meeting that none had occurred within the past year. However, about the very time the report was being drawn up, and a few days before it was read, Scotland was visited by quite a sharp shock, which is thus described in the Scotch papers:—On Thursday, the 8th of August, an earthquake shock was felt at ten minutes past four o'clock at the Bridge of Allan, and was also felt over a considerable extent of country. At Braco and Kinmuck panes of glass were broken; at Dunblane and Bridge of Allan a number of houses were severely shaken, and glass was broken on sideboards. At about the same time the shock was felt in Stirling, and was attended by a loud rumbling noise like thunder. It is stated that no such sharp shock has been felt since 1839. In the evening a fine display of aurora borealis was observed in South Wales for nearly two hours.

A slight shock of earthquake was felt at Chopea, in Khandeish, on the evening of Friday, July 12, at about seven o'clock. The shock lasted for about a minute, and appears to have been felt at the same time at Amalner, Dhurrangaon, Dhulia, and Julgaon. Its course was from west to east.

A slight shock of earthquake is also reported to have been felt at Tripatore, in the Salem district in India, on the morning of the 15th of July.

An earthquake shock was felt along the Long Island coast on July 11, and also in the northern part of Missouri, but it did no damage. A good deal of fright was caused in various Long Island villages.

A very violent tornado passed over Philadelphia on August 6. It was accompanied by vivid lightning and loud peals of thunder, and a tremendous downpour of rain. Trees were blown down, houses and churches unroofed, and much damage done by falling bricks and tiles, &c. No loss of life is reported, but the damage to property throughout the city is immense.

Many of our readers will be glad to hear that Mr. Robert Swinhoe, H.B.M. Consul at Ningpo, China, is recovering from the serious illness which laid him prostrate about a year ago. Letters which were received from him by the last mail announce his gradual convalescence, and that he was already resuming the zoological investigations which have rendered his name so well known to naturalists. Mr. Swinhoe has now succeeded in obtaining living specimens of the singular hornless deer which he lately drescibed, and figured in the "Proceedings" of the Zoological Society as *Hydropotes inermis*, and will forward them to that Society's gardens by the first opportunity. He has also obtained specimens of several mammals and birds new to the Chinese fauna.

THE *Madras Athenæum* of July 19 records the death of Capt. Mitchell, the Superintendent of the Central Museum, Madras, well-known as an accomplished naturalist and a gentleman of most engaging personal character.

DR. SCHWEINFURTH, the renowned German explorer in Central Africa, is about to return with the object of continuing his explorations, chiefly in the interests of botany. His brother, a merchant at Riga, has come forward with a handsome sum of money, the interest of which will be given to aid Dr. Schweinfurth in his undertaking, and will afterwards be handed to the Polytechnic School of Riga, to found a prize to defray the travelling expenses of future explorers who may have studied there with success.

WE learn from the *Madras Times* of July 18 that the pioneering party which was sent to Cummum some five or six months ago to bore for coal have been very successful in their operations, notwithstanding the difficulties and hardships they had to contend against. Three distinct and promising seams of coal have been struck, and the quality of the coal is spoken of as being superior to that of Sasti. The party will return to renew operations at the fall of the year. The attention of Government is also being drawn to the discovery of copper in certain districts where hitherto its presence was unknown. In the Nagur Kurnool the existence of this ore has recently been discovered, and samples of it are, with a piece of copper wire manufactured in the district, transmitted to Government, who have forwarded them to scientific men for examination and report. It is also said that copper ore has been discovered near Yedlabad, in the Indoor district; but doubts are entertained as to whether the ore is indigenous to the locality where it was found, or whether it has been washed down from the hills to the west of Yedlabad. This doubt is to be cleared up as soon as opportunity offers. The Government have also been recently directing their attention to the iron ore of the Cummum district. This is no late discovery, but the Government were not before aware of the abundance and excellence of the iron to be obtained in that part of their territories. This, it will be remembered, is also a promising coal district. So here we have side by side those two mighty engines of civilisation to which the "old country" is greatly indebted. It is much to be regretted that the resources of the territories are so imperfectly known. But the vigorous and earnest measures the Minister is taking to develop them will do much to bring them to light.

WE would recommend to those interested in scientific education and the establishment of colleges of science in this country the report of the Massachusetts Institute of Technology for 1871-72. The subjects embraced in the course necessary to qualify as a graduate of the Institute are varied, and the curriculum in each department is comprehensive and thorough. For example, the course in the department of Geology and Mining Engineering extends over four years, and is so arranged as to secure to the student a liberal mental development and general culture as well as the more strictly technical education which is his chief object. The space devoted to laboratories, and the prominence given to laboratory work, in Physics, Chemistry, Assaying, Blowpipe Analysis, Metallurgy, and Ore-dressing, is a marked feature of the scheme of instruction of the Institute. The Institute seems to flourish as it deserves.

WE have received a reprint from the "Proceedings of the Liverpool Geological Society" of the address of the President, Dr. Ricketts, on valleys, deltas, bays, and estuaries. In a thoroughly praiseworthy and fair spirit he considers the opinions that have been held from time to time by different geologists on the subject of denudation, and especially the formation of valleys. His own interpretation of the facts deserve consideration, and the address as a whole is worthy of perusal.

THE *Journal de Physique* for August contains the third part of M. Cornu's paper, "Sur les Mesures Electrostatiques," and a paper on the Electric Chromoscope of MM. F. Lucas and A. Cazin.

WE take the following from the *Chemical News*:—There are no handbooks on chemistry in the Italian language; but a work has been in course of publication since 1867 somewhat similar to the first edition of the celebrated German "Handwörterbuch der reinen und angewandten Chemie," viz., "Enciclopedia Chemica," edited by F. Selmi, of Bologna, with the co-operation of Arnaudon, of Turin, for technical chemistry, and of Sestini, Paterno, and others, for pure chemistry. There are 2,000 subscribers to this work, which is highly valued in Italy. The Italian Government has appointed Dr. Cannizzaro, Professor of Chemistry at Rome; and 20,000*l.* has been voted by the Italian Parliament for the establishment of a chemical laboratory in Rome. The Florentine Institute (*Istituto Superiore*) receives, in addition to its present subsidies, an annual subsidy of 25,000*l.*, and will be converted into a kind of Polytechnic University.

THE following is from the *British Medical Journal*:—M. Lindeman continues his investigation of the parasitic bodies (Gregarinidæ) found on the false tresses and chignons commonly worn by ladies. They are to be found at the extremity of the hairs, and form there little nodosities, visible, on careful examination, to the naked eye. Each of these nodosities represents a colony of about fifty psorosperms. Each psorosperm is spherical; but, by the reciprocal pressure of its neighbours, it is flattened, and becomes discoid. Under the influence of heat and moisture, it swells; its granular contents are transformed into little spheres, and then into pseudo-navicellæ—little fusiform corpuscles, with a persistent external membrane, and enclosing one or two nuclei. These pseudo-navicellæ become free, float in the air, penetrate into the interior of the human organism, reach the circulatory apparatus, and produce, according to this author, various maladies—"cardiac affections, especially valvular affections, Bright's disease, pulmonary affections." M. Lindeman calculates that, in a ballroom containing fifty ladies, forty-five millions of navicellæ are set free; and he concludes that it is necessary to abolish false hair, which often proceeds from unclean persons.

WE have two small blue-books issued by the Government Meteorological Committee. They are both translations, specially intended for the use of seamen. The one, a paper issued by the Royal Meteorological Institute of the Netherlands, is Lieutenant Cornelissen's "Notes for the Navigation of the Indian Ocean between Aden and the Straits of Sunda," which gives details concerning the winds that affect that ocean, and contains four charts, having the outward and homeward routes for the four quarters of the year clearly indicated. The other is translated from No. III. of the *Mittheilungen aus der Norddeutschen Seewarte*, being a paper on "The Winds, &c., of the North Atlantic along the tracks of steamers to New York," and contains some carefully-constructed tables, showing the distribution, force, &c., of winds and storms in the North Atlantic throughout the year.